



# Oracle Autonomous Database Update

Global Leaders 2020

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VP of Product Management

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Distinguished Product Manager



# What's new with Oracle Autonomous Database?

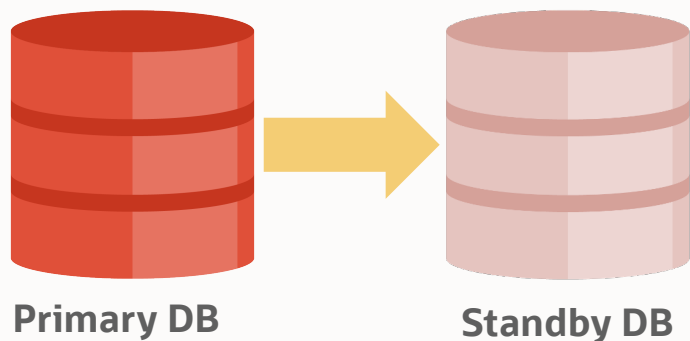


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# Autonomous Database: Recent New Features

March	April	May	June	July	August
Private Endpoints	Per-second billing	19c One-Click Upgrade	Autonomous Cloud@Customer	Autonomous Data Guard	Autonomous JSON Database
APEX 19.2	JSON Document API (SODA) Support	99.95% Service Level Agreement	Customer Managed ORDS	Oracle Apps Certifications	Support for more object stores (GCP, Wasabi)
Database Restart	Extensions for IDEs			APEX 20.1	

# Autonomous Data Guard



- Fully-managed standby database
- Simple and transparent
  - Completely transparent to customer applications
  - Automatic failover for zero-data loss scenarios
  - User-initiated failover for other scenarios
- Initially in same region as primary database
  - In different availability domains when possible
  - Cross-region standby coming soon
- 99.995% availability





# Autonomous JSON Database

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# Autonomous JSON Database

Provides the same benefits as NoSQL document stores

- New service for **JSON-centric** development
- Flexible and fast at scale
- **Native** JSON storage
- Simple **document APIs**
  - Language drivers, command-line, and REST
  - SQL not required



# Autonomous JSON Database

More than a simple document store

- ✓ Autonomous
- ✓ Full SQL support
- ✓ ACID Transactions
- ✓ Advanced security
- ✓ APEX low-code development
- ✓ One-click instant expansion to ATP



# CRUD Operations

Introducing **SODA** (Simple Oracle Document Access) and **SQLcl**

## SODA APIs

- NoSQL-style APIs for
  - Java, JavaScript/Node.js, Python, REST, PL/SQL, C...
- Used to manage JSON data
  - create collections
  - store documents in collections
  - retrieve documents
  - query documents
  - ***No need to know SQL!***

## SQLcl

- Modern SQL Developer Command Line interface for Oracle database
- Provides
  - inline editing, statement completion, command recall...
  - **SODA commands**

# MongoDB Compared to Oracle SODA

```
MongoClient mongoClient = new MongoClient();

DB database = mongoClient.getDB("procurement");

DBCollection coll =
database.getCollection("purchase_orders");

BasicDBObject po = new
BasicDBObject(JSON.parse(json1));

coll.insert(po);

DBObject query = new BasicDBObject("Requestor",
"Alexis Bull");

DBCursor cursor = coll.find(query);

DBObject doc = cursor.one();
```

```
OracleDatabase db = new
OracleRDBMSClient().getDatabase(jdbcConnection);

OracleCollection coll =
db.admin().createCollection("purchase_orders");

OracleDocument po = db.createDocumentFromString(json1));

coll.insert(po);

OracleDocument qbe =
db.createDocumentFromString("{"Requestor": "Alexis
Bull"}");

OracleCursor cursor = coll.find().filter(qbe).getCursor();

OracleDocument doc = cursor.next();
```

# Autonomous JSON Database

## Lower Cost than MongoDB

- Autonomous JSON Database Pricing:
- \$0.2688 OCPU per hour (\$240/month)
- \$0.1591 TB per hour (\$118.40/month)

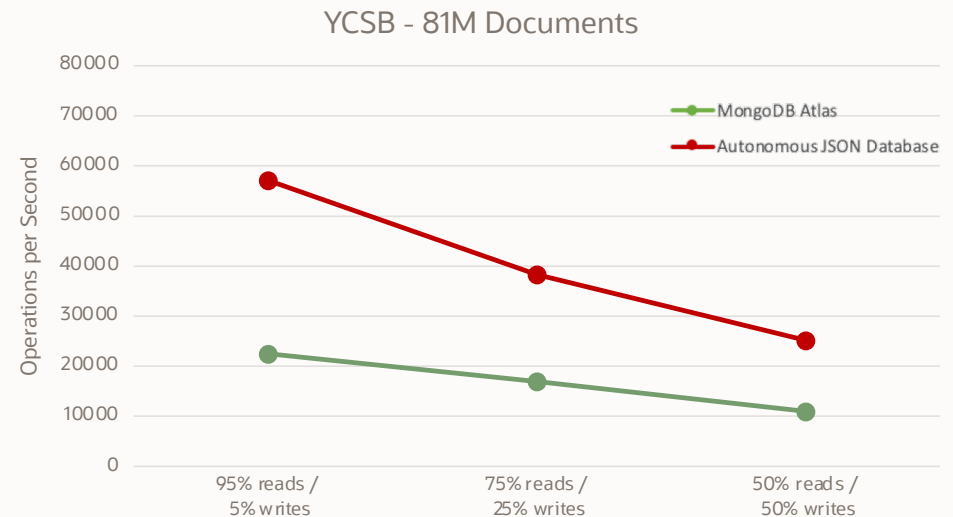
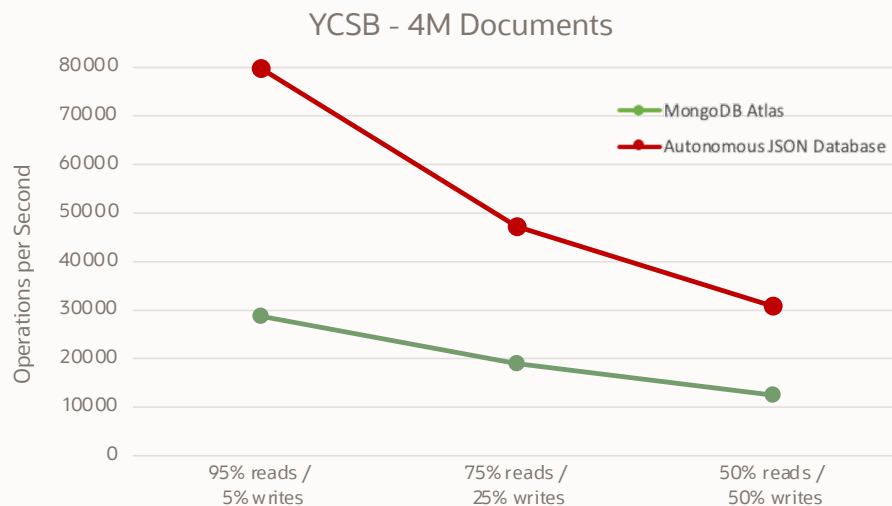
	Autonomous JSON DB	MongoDB Atlas
Configuration	8 OCPU 1 TB storage	M60 on AWS 16 vCPU (= 8 OCPU) 320 GB storage
Price (on-demand)	<b>\$2.74 / hour</b>	<b>\$3.95 / hour</b>

**PLUS:** Autonomous JSON Database is auto-scaling, not limited to fix shapes



# Autonomous JSON Database

## Faster than MongoDB



Autonomous JSON Database with 8 OCPUs compared to MongoDB Atlas on M60

Industry-standard Yahoo Cloud Serving Benchmark (YCSB)

Source of MongoDB results: <https://www.mongodb.com/atlas-vs-amazon-documentdb/performance> as of 8/12/2020




# 19c One-Click Upgrade on Oracle Autonomous Database



# One Click Upgrade

ORACLE Cloud Search for resources, services, and documentation US East (Ashburn) > > ? > > >

Overview » Autonomous Database » Autonomous Database Details



AVAILABLE

Plan your upgrade to [Oracle Database 19c](#) now. Learn how to upgrade [here](#). [Upgrade to 19c](#)

DB 202001212148

DB Connection Performance Hub Service Console Scale Up/Down More Actions

Autonomous Database Information Tools Tags

### General Information

**Database Name:** DB202001212148

**Workload Type:** Data Warehouse

**Compartment:** adwc4pm (root)

**OCID:** ...b3zzxa [Show](#) [Copy](#)

**Created:** Wed, Jan 22, 2020, 05:48:30 UTC

**OCPU Count:** 1

**Storage:** 1 TB

**License Type:** Bring Your Own License (BYOL)

**Database Version:** 18c [Upgrade to 19c](#)

**Auto Scaling:** Enabled

**Lifecycle State:** Available

**Instance Type:** Paid

### Infrastructure

**Dedicated Infrastructure:** No

### Backup

**Last Automatic Backup:** Mon, Aug 31, 2020, 07:01:40 UTC

### Network

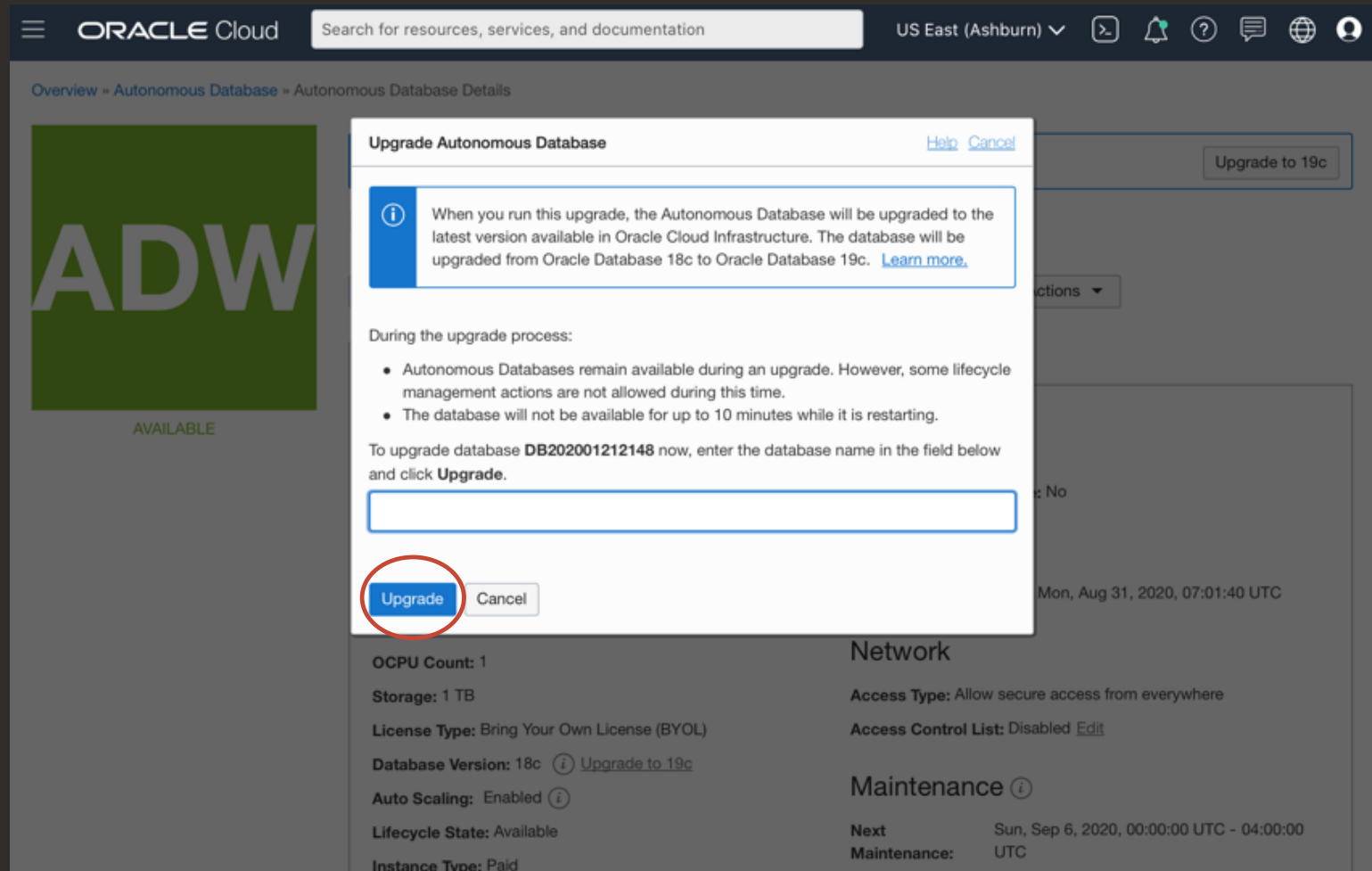
**Access Type:** Allow secure access from everywhere







**Access Control List:** Disabled [Edit](#)

### Maintenance

**Next Maintenance:** Sun, Sep 6, 2020, 00:00:00 UTC - 04:00:00 UTC

# One Click Upgrade




**ORACLE Cloud** Search for resources, services, and documentation US East (Ashburn)      

Overview » Autonomous Database » Autonomous Database Details

**ADW**  
AVAILABLE

**Upgrade Autonomous Database** [Help](#) [Cancel](#)



 When you run this upgrade, the Autonomous Database will be upgraded to the latest version available in Oracle Cloud Infrastructure. The database will be upgraded from Oracle Database 18c to Oracle Database 19c. [Learn more.](#)

During the upgrade process:


- Autonomous Databases remain available during an upgrade. However, some lifecycle management actions are not allowed during this time.
- The database will not be available for up to 10 minutes while it is restarting.

To upgrade database **DB202001212148** now, enter the database name in the field below and click **Upgrade**.

**Upgrade** Cancel

**OCPU Count:** 1  
**Storage:** 1 TB  
**License Type:** Bring Your Own License (BYOL)  
**Database Version:** 18c  [Upgrade to 19c](#)  
**Auto Scaling:** Enabled   
**Lifecycle State:** Available  
**Instance Type:** Paid

**Network**  
**Access Type:** Allow secure access from everywhere  
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[Upgrade to 19c](#)

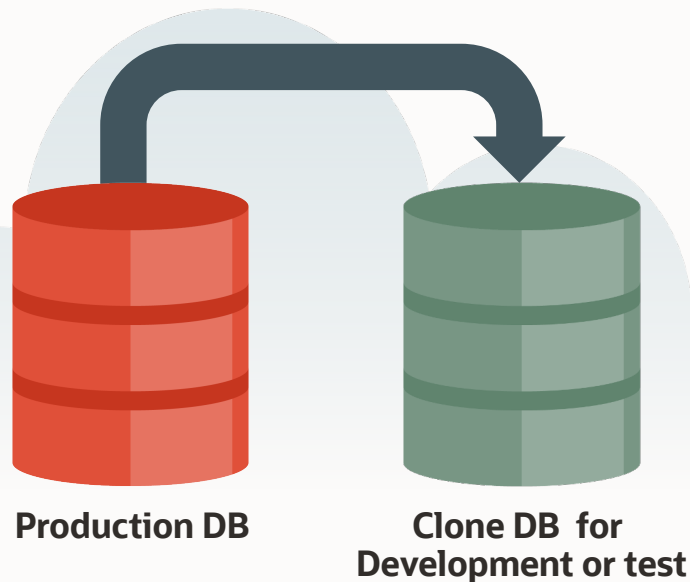


# How to use the most popular “lifecycle” feature of Oracle Autonomous Database to Upgrade



# Cloning – The Most Popular Feature in ADB

*Quickly provision a point-in-time copy*



- Cloning creates a point-in-time copy of
  - An Autonomous Database
  - A backup of an Autonomous Database
- Two types of clone can be created:
  - A full database clone
  - A metadata clone (Schema but no data)
- Easy and fast as user only decides:
  - Compartment for the clone
  - Name of the clone
  - CPU and storage
  - New ADMIN password

# Real-Customer Example of Cloning in Action

Using Cloning to Prepare for Database Upgrade

July 29th

**Production  
DB 5TB**

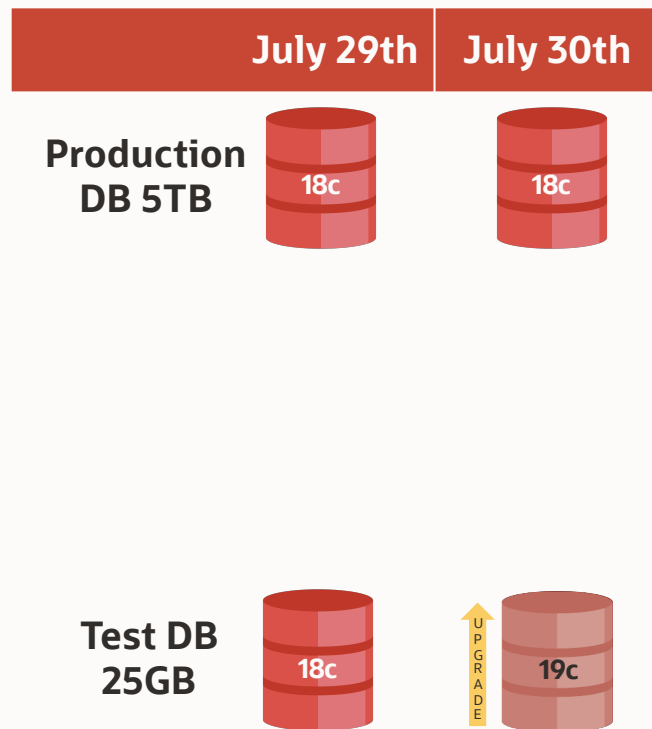


**Test DB  
25GB**



# Real-Customer Example of Cloning in Action

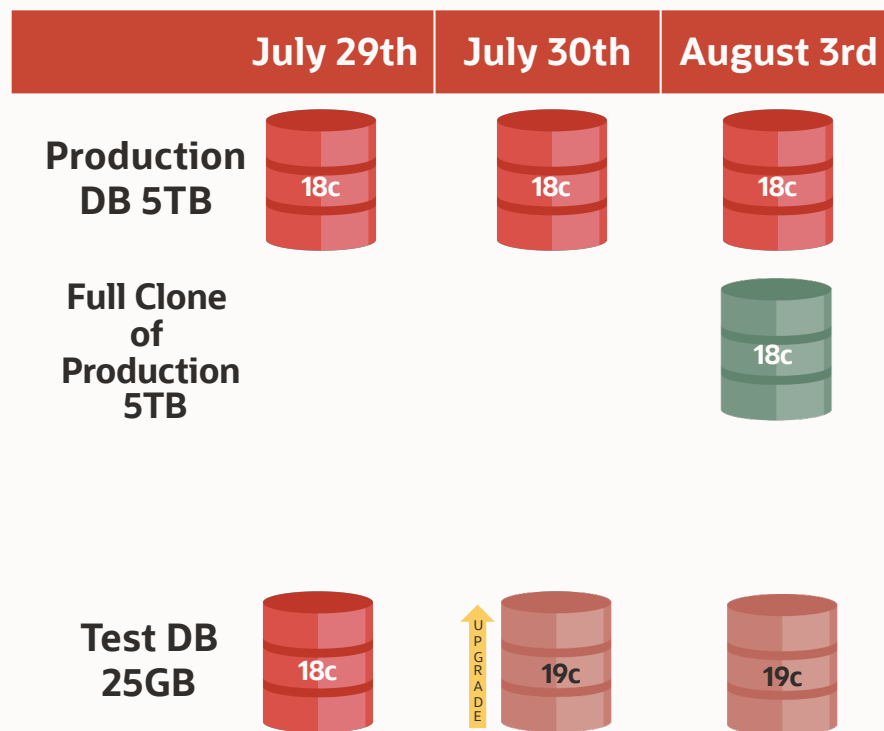
Using Cloning to Prepare for Database Upgrade





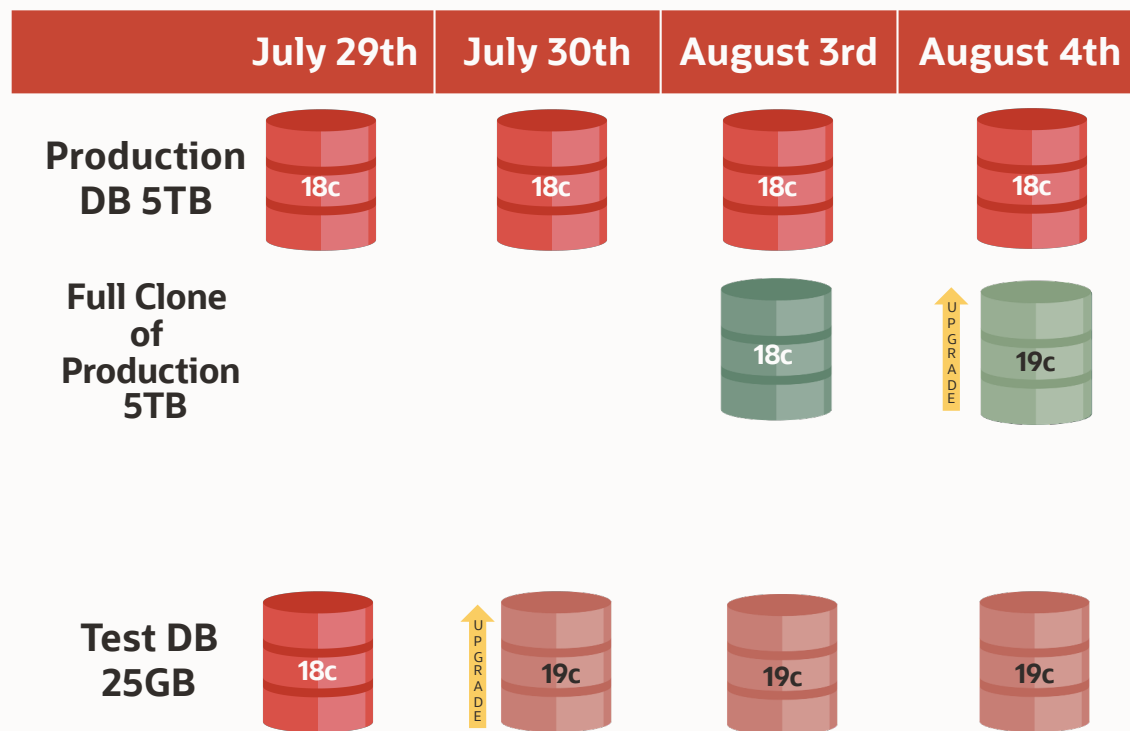
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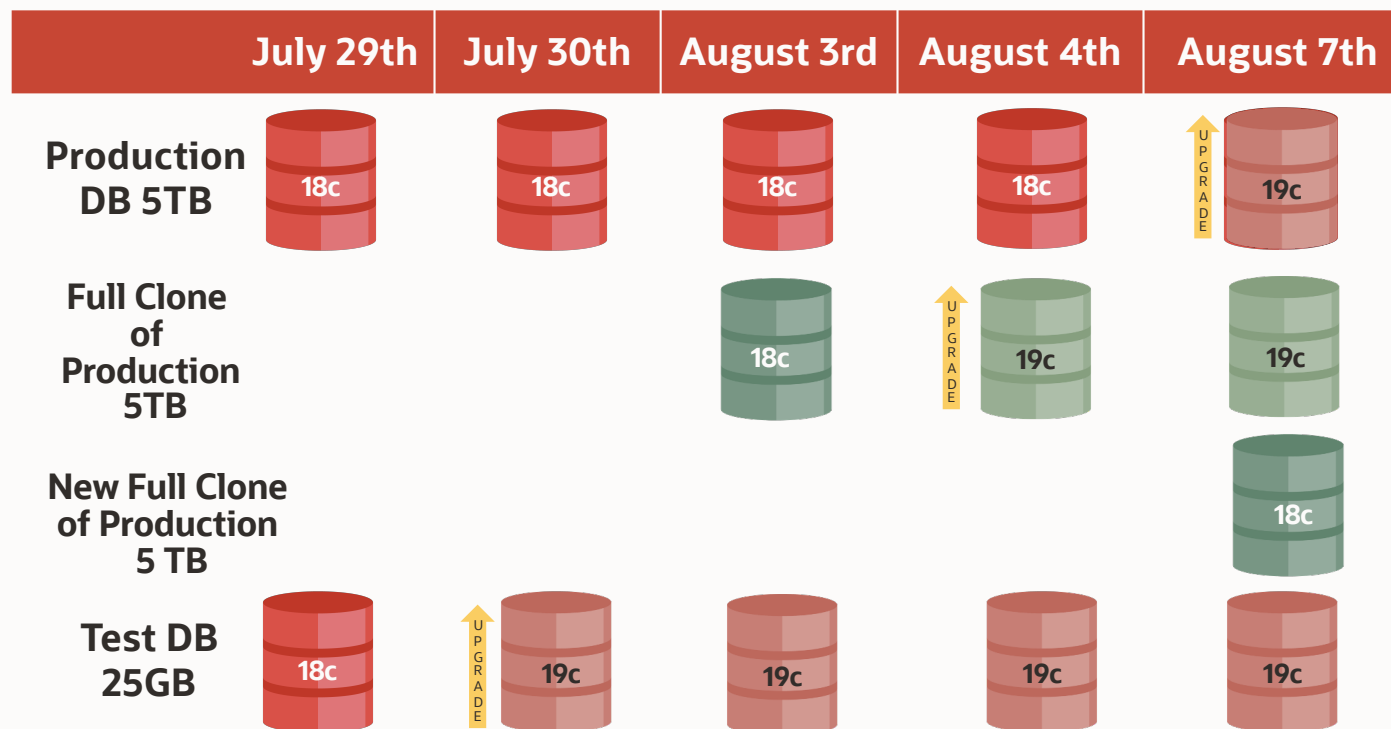
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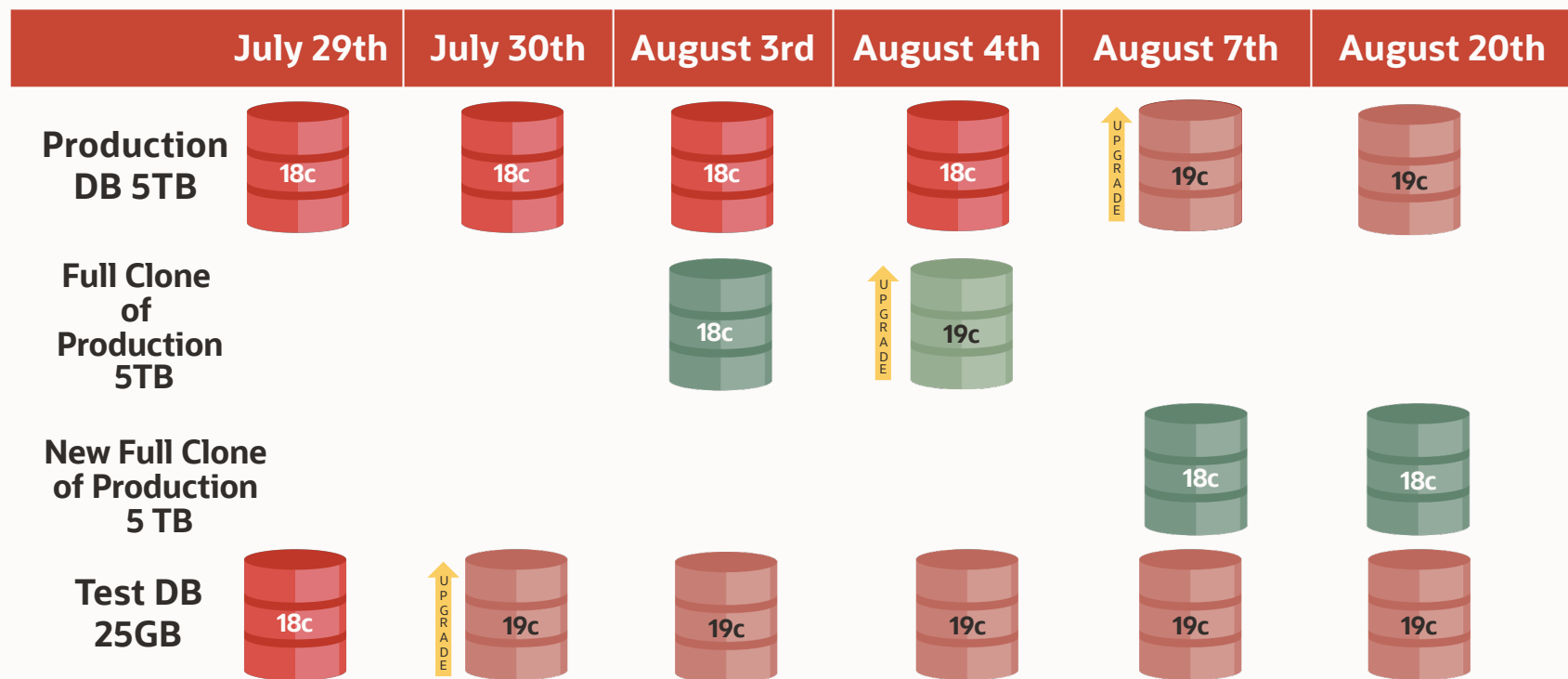
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Using Cloning to Prepare for Database Upgrade



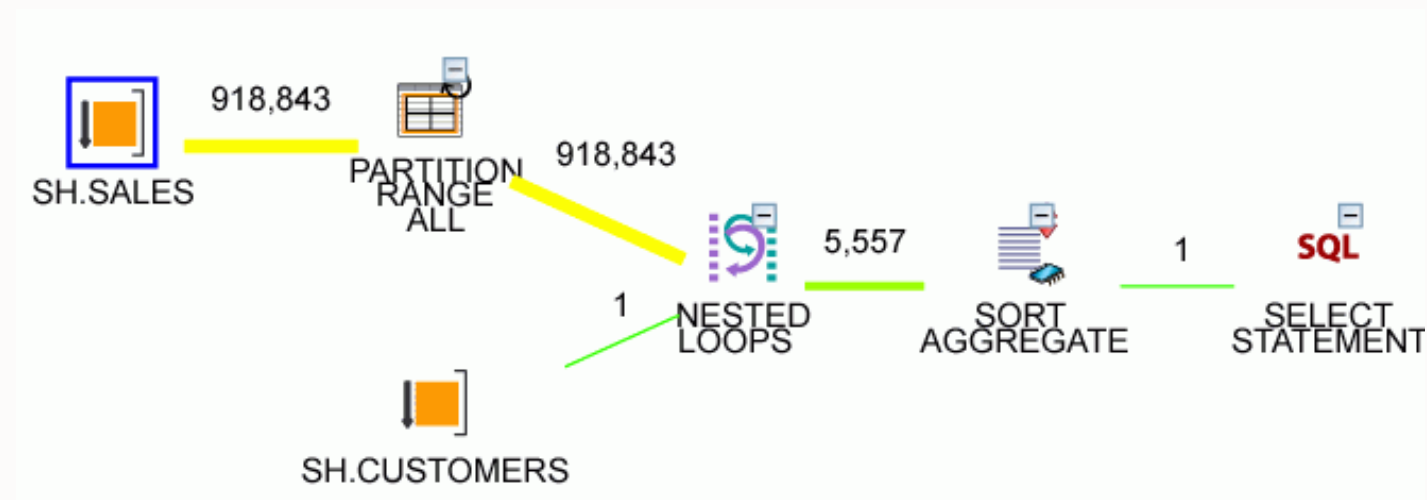
# Historical Pain Point of Database Upgrades

Will there be a Performance Regression?



# Historical Pain Point of Database Upgrades

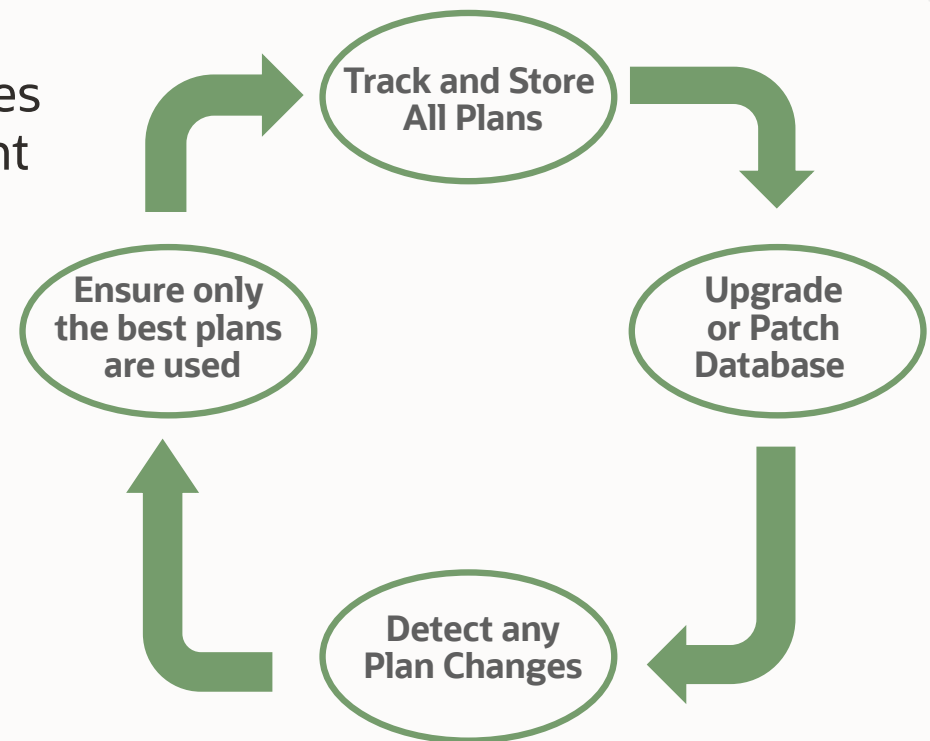
Leading Cause of Performance Regressions?



Execution Plan Changes

# Autonomous Plan Stability Management for Upgrades

- Autonomous Database prevents performance regressions during upgrades and patching with SQL Plan Management
  - Fully automated
  - Always enabled
  - **Zero customer actions required**
- Execution plan and runtime statistics for every known SQL statement stored in Automatic SQL Tuning Set
  - Easily retrieved if plan regression is detected





# Autonomous Plan Stability Management for Upgrades

**A  
perfect  
combination of**



## Automation – Capture existing Good Plans


- Oracle Autonomous Database uses an Automatic SQL Tuning Set (STS) to capture existing 18c execution plans for all SQL statements
- Task runs periodically to ensure all critical SQL statements are captured
- You can check what statements have been captured by looking in `DBA_SQLSET_STATEMENTS` using the name `SYS_AUTO_STS`



# Best Practices – Use SQL Plan Management

- Use 'stored' SQL execution plans to prevent Performance Regressions
  - Stored plans are used to prevent unexpected execution plan changes
  - When a new execution plan is found for a SQL statement:
    - A copy of a new plan is kept but not used
    - Use the previous stored plan to ensure consistent performance
    - Offline, test new plan and enable it only after it has been proven to improve performance
- Extremely useful for critical systems
  - Ensures plan stability through upgrades

You should use SQL Plan Management today in all of your on-prem systems

A person wearing a dark suit, white shirt, and dark tie is holding up their right hand, palm facing forward, in a universal 'stop' gesture. The background is a blurred office setting.

Yeah but we  
still can't use  
an  
Autonomous  
Database

# Autonomous Database Support for Oracle Apps

**ORACLE®**  
PeopleSoft

- PeopleSoft Enterprise PT PeopleTools
- Version 8.57 to 8.58
- Certified on Dedicated Infra and Cloud@Customer
- MOS Note 2699934.1

**ORACLE®**  
JD Edwards

- JD Edwards Applications Release 9.2 and above
- JD Edwards Tools Release 9.2.4.3 and above
- Certified on Dedicated Infra and Cloud@Customer
- MOS Note 2687249.1

**ORACLE®**  
Siebel

- Siebel System Software - Version 20.10 and later
- Certified on Dedicated Infra and Cloud@Customer
- Expected Oct. 2020

**Available Now**

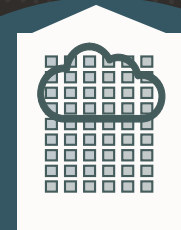
# Autonomous Database Deployment Options



**Exadata  
Infrastructure  
in the Cloud**



**Gen 2 Exadata  
Cloud@Customer**



**Dedicated Region  
Cloud@Customer**

# Some Customers Cannot Move to Public Cloud

## Regulations

- Regulations or policies require data to be local

## Latency

- Applications require performance of local LAN

## Integration

- Databases tightly-coupled with on-premises applications

## Risk

- Concerns about multiple tenants sharing the cloud



Exadata Cloud@Customer Addresses These Concerns



# Autonomous Database on Exadata Cloud@Customer



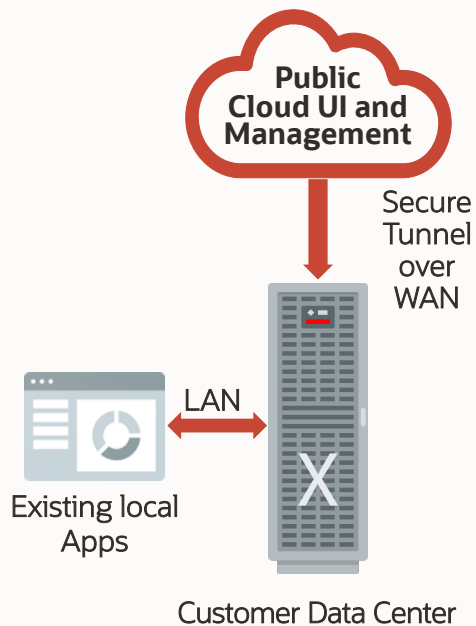
Same features and benefits of Autonomous Database in Public Cloud

Now running on Gen 2 ExaC@C in your data center

# Autonomous Database – Exadata Cloud@Customer

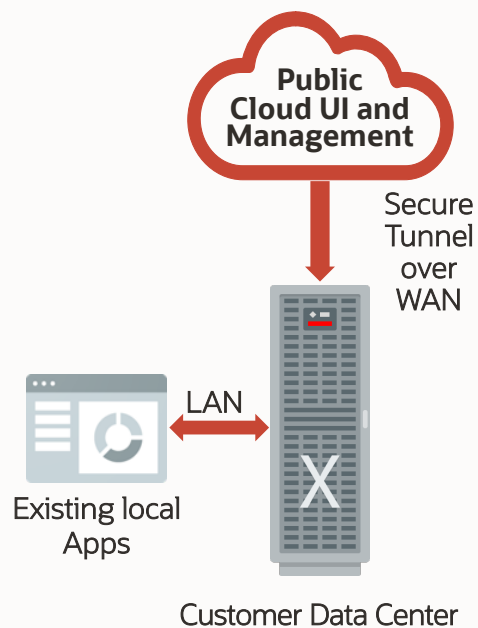
## Primary Goals/Benefits

- Autonomous DB on Gen 2 Exadata Cloud@Customer
  - Looks exactly like Autonomous DB running in Public Cloud
  - Same simplicity, agility, performance, and elasticity



# Autonomous Database – Exadata Cloud@Customer

## Primary Goals/Benefits



- Autonomous DB on Gen 2 Exadata Cloud@Customer
  - Looks exactly like Autonomous DB running in Public Cloud
  - Same simplicity, agility, performance, and elasticity
- Simplest and fastest transition to Autonomous Cloud
  - Easily migrate existing on-prem databases
  - Existing Apps in data center simply re-connect and run
  - No application changes needed
  - Data never leaves your data center

# Autonomous Database on Dedicated Regions Cloud@Customer

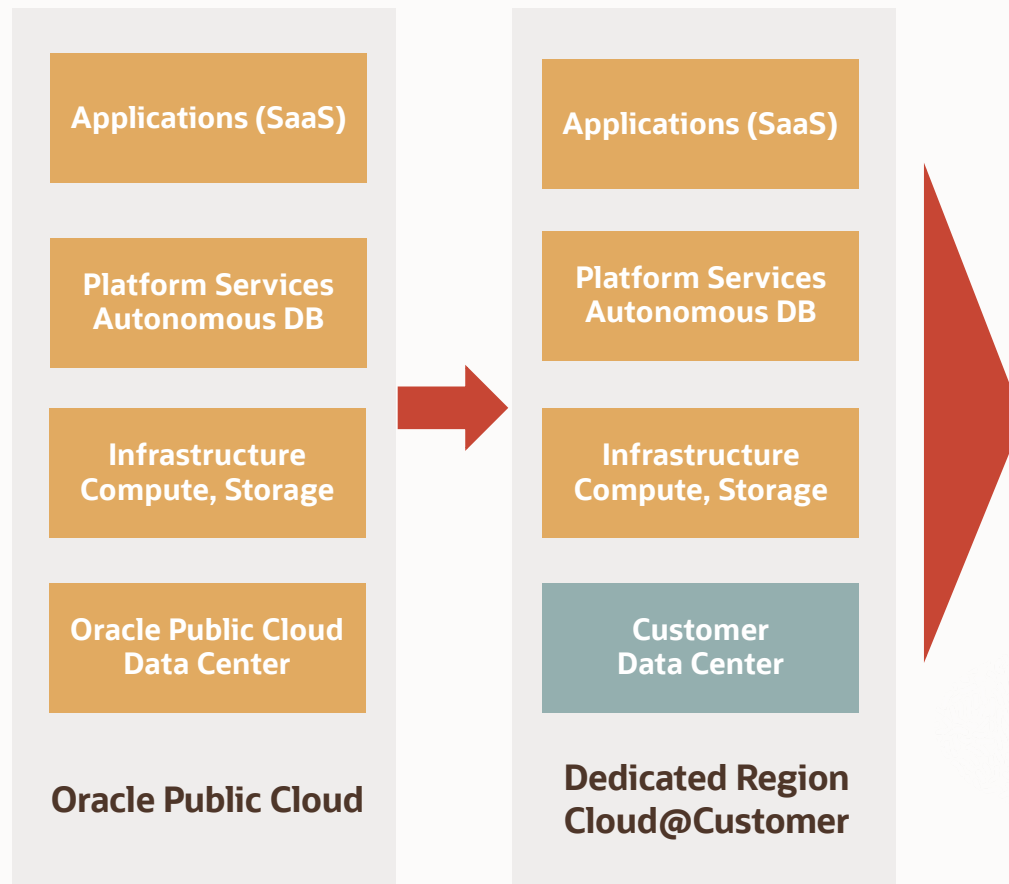


Same features and benefits of Autonomous  
Database in Public Cloud

Now running on your own Dedicated Region

# Dedicated Region Cloud@Customer

Copy & Paste Oracle Gen2 Public Cloud into Your Data Center



## All Public Cloud Services in Your Data Center

- Fusion Apps, Autonomous DB, Compute, etc.
- Oracle managed maintenance and operations
- Unified management console with public cloud
- SLA guarantees match the public cloud
- **Only pay for what you use**
- **Same price as public cloud**
- Pay with Universal Credits



# Oracle Autonomous Database

## The **Same** Capabilities Everywhere You Need Them



# Questions







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